

Introduction to Computing-LAB

Lab 04	
Topic	Conditional Statement (if-else)
Objective	Learning how to build logic by using conditional statement.

Selection:

In selection, the program executes particular statements depending on some conditions. There are multiple selection statements:

if:

syntax:

```
if(expression)
{
Body of if(statement);
}
```

In this selection statement a set of instruction are dependent on the condition/expression of selection statement if condition/expression is true body of selection statement will be executed. If condition/expression is false body of selection statement will be skipped and next instructions which are defined after selection statement will be executed.

if else:

syntax:

```
if(expression)
{
Body of if(statement);
}
else
{
Body of else(statements);
}
```

In this selection statement a set of instruction are dependent on the condition/expression of selection statement if condition/expression is true body of selection statement will be executed. If condition/expression is false body of selection statement will be skipped and body of else will be executed. Else part doesn't have any condition/expression.

if else if:

syntax:

```
if(expression)
{
Body of if(statement);
}
else if(expression)
{
Body of else(statements);
}
```

In this selection statement a set of instruction are dependent on the condition/expression of selection statement if condition/expression is true body of selection statement will be executed. If condition/expression is false, then next selection statement's condition/expression will be tested and so on. If any of the selection statement is tested as true than no further statement will be test and the control of program will be shifted after those selection statement.

Task 1: Write a program that inputs marks of three subjects. If the average of marks is more than 80. It displays two messages **“You’re above Standard!”** and **“Admission granted!”**

Sample Output:

Enter marks of first Subject: 90 Enter marks of second Subject: 80 Enter marks of third Subject: 80 You’re above Standard! Admission granted!

Task 2

Write a program that take a integer input from the user and tell whether the number is even or odd.

Sample Output:

Enter Number: 34 Number 34 is even.
Enter Number: 13 Number 13 is odd.
Enter letter: 26 Number 26 is even.

Task 3

Write a program that inputs three numbers and displays the maximum number.

Sample Output:

Enter first number: 20 Enter second number: 30 Enter third number: 10 The maximum number is 30.

Task 4

Write a program to input a number from user and determine whether it is positive, negative or zero.

Sample Output:

Enter a number: 20 The number is positive.
Enter a number: 0 The number is zero.
Enter a number: -20 The number is negative.

Task 5

Write a program that reads two integers and then uses the conditional expression operator to print either its **“multiple”** or **“not”** according to whether one of the integers is a multiple of the other.

Sample Output:

Enter first integer: 12 Enter second integer: 6 12 is the multiple of 6
Enter first integer: 12 Enter second integer: 13 12 is not the multiple of 13

Task 6

Write a program that simulates a simple calculator. It reads two integers and a character.

- If the character is a '+', the sum is printed;
- if it is a '-', the difference is printed;
- if it is a '*', the product is printed;
- if it is a '/', the quotient is printed; and
- if it is a '%', the remainder is printed.

Sample Output:

Input: 12%7 Modulus = 5
Input: 19x10 Multiplication = 190
Input: 12/7 Division = 1.7142

Task 7

ITC has 6 sections we are required to find out which sections average is higher. Write a program which takes each section's ITC average and Output which section has won w.r.t average.

Sample Output:

Enter ITC average for 6 sections:	
B	90
D	80
C	60
A	99
E	91
F	80
A got the highest average	

Task 8

Write a C++ program that read a int value from user and assign user “Grade” according to the UCP absolute grading policy displayed website:

<https://ucp.edu.pk/rules-regulations>

Letter Grade	Grade Points	Marks(%)
A	4.0	86-100%
A-	3.67	82-85%
B+	3.33	78-81%
B	3.00	74-77%
B-	2.67	70-73%
C+	2.33	66-69%
C	2.00	62-65%
C-	1.67	58-61%
D+	1.33	54-57%
D	1.00	50-53%
F	0.00	Below 50%

Task 9

Write a program which takes 3 inputs integers and tell the 2nd maximum.

Sample Output:

```
Enter three integers: 90 5 60
Second maximum integer is 60
```

Task 10

Write a program which takes as input a floating number and prints its ceiling Integer.

Sample Output:

```
Enter floating-point number: 5.5
Its ceiling integer is 6

Enter floating-point number: -5.5
Its ceiling integer is -5

Enter floating-point number: 5
Its ceiling integer is 5
```

Task 11

Write a program which takes as input a floating number and prints its floor Integer.

Sample Output:

Enter floating-point number: 5.5 Its floor integer is 5
Enter floating-point number: -5.5 Its floor integer is -6
Enter floating-point number: 5 Its floor integer is 5

Task 12

Write a program of a BMI calculator application that reads the user's weight and height and then calculates and displays the user's body mass index. The formula for calculating BMI is:

$$\text{BMI} = \text{Weight} / (\text{Height} * \text{Height})$$

Also, the application should display the following information from the scale provided below.

BMI VALUES

Underweight: less than 18.5

Normal: between 18.5 and 24.9

Overweight: between 25 and 29.9

Obese: 30 or greater

Note: You are allowed to use Logical Operators and If statements.

Task 13

Write a program to determine the weight of chocolates being sold. The program takes as input, the number of chocolates being sold, weight of one chocolate in ounces and the choice of weighing i.e. ounces, pounds, grams or kilograms. User enters 'O' as a choice to calculate weight in ounces, 'P' for pounds, 'G' for grams and 'K' for kilograms. Depending on the choice entered by the user the program calculates the weight of chocolates. Display an appropriate message if invalid choice is entered. Use following formulas to calculate total weight of chocolates.

For weighing in Ounces

$$\text{total_weight} = \text{number_of_chocolates} * \text{weight_of_Chocolate}$$

For weighing in Pounds

$$\text{total_weight} = \text{number_of_chocolates} * \text{weight_of_Chocolate} / 16$$

For weighing in Grams

$$\text{total_weight} = \text{number_of_chocolates} * \text{weight_of_Chocolate} * 28.349$$

For weighing in Kilograms

$$\text{total_weight} = \text{number_of_chocolates} * \text{weight_of_Chocolate} * 28.349 / 1000;$$

Sample Output:

Enter the number of chocolates being sold: 20

Enter weight of one chocolate in ounces: 2

Enter the choice for weighing

=> Enter O to calculate in ounces

=> P for pounds

=> G for grams

=> Kfor kilograms

Enter your Choice: O

Weight in Ounces is 40